Fifteenth Year of Publication

Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

Vol. XV, No. 11 **SEPTEMBER, 1939** **$2.00 a Year**

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Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Ken-Nite Compound

Three or four years ago we used a product called "Kennite" for rubbing down our lacquered metal caskets. We do not remember where we purchased this, and we are writing to see if this is still on the market, and also the name of the manufacturer. —L. E. Co.

We believe this material is a product of the Ken-Nite Co., Detroit, Mich.—ED.

Paint for Glass

We would appreciate it if you would let us know the possible sources of supply for an air-dry paint which will adhere to clear polished glass.—O. W. Co. (Wrought Iron Furniture).

Graining Paper

Can you tell us the names and addresses of American manufacturers of a transfer graining paper for wood grain reproduction on wood or metal—something that is the same or similar to what is made in Germany and is known there as "Abziehpapier"? It is not a decalcomania. It's a paper with the patterns printed on one side, which side is placed against the furniture surface, moistened with water and a sponge and then rubbed with a brush to have the patterns transferred to the furniture. The Germans make many different grain reproductions of a great variety of woods. It sells in rolls of approximately 25-ft. long and about 26-in. wide.

Your kind help to us in facilitating contact with manufacturers in the States that make the item mentioned will be greatly appreciated.—T. P. Co., Habana, Cuba.

In reply to this we have submitted names of three concerns whom we understand can supply something of this kind. We will appreciate hearing from anyone who knows more about this kind of paper.—ED.

Trend Toward Shellac

I wish to commend you on the high quality of your magazine and its many instructive articles. In my opinion there is a definite trend towards an increasing use of shellac these days, in preference to synthetic finishes, and I should like to see more articles on the subject. It appears, strangely, that a great many finishers have forgotten the correct use of shellac, and a few words on this subject might not go amiss.—Kenneth O'Meara.

Termite Proof Paints

Referring to a published inquiry under the above title in August 1939 issue, pages 60 and 61, and the Editor's request about "a chemical to be mixed in small quantities with paint to prevent the growth of fungus and to prevent termites from boring through the film," we manu-

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facture materials for mixing into paints to accomplish these results.

MerQree is a paint base mercurial with fungicidal properties for addition to exterior paints to prevent mildew. This product consists of a small amount of mercury salt (11% of calomel, an efficient fungicide) as well as other efficient mildew toxics which are ground in a white paint base, thus making it relatively safe and easy to handle. The label contains information about the composition, and instructions for using. It is readily mixed into white lead or mixed paint of any color. Each pint can contains sufficient to treat five gallons of exterior paint; each ¼-pint can contains sufficient to treat one gallon of paint.

R888 is a paint base with fungicidal properties, that is free of mercury or other metallic poison. This product contains powerful organic ingredients which have proved extremely efficient in preventing mildew. It is designed for interior paints for breweries, dairies, textile mills, or other places where mildew occurs. It is a white paint base which mixes readily into white lead, ready mixed paints, mill or factory whites, enamels, flats, casein paints, or emulsified alkyd coatings. It is used in same proportions as MerQree.—MerQree, Inc.

"Lucite"

If you know of a concern that manufactures a material called "Lucite," will you kindly send us their address? We understand this is a liquid which can be cast and is unbreakable.—B. H. Co. (Reproductions from Life).

"Lucite" is a product of the E. I. duPont deNemours & Co. (Plastics Dept.) New York, N. Y.—ED.

Roller Coater

You illustrate a machine for roll-coating slats in the article, "Bake Finishing Wood Slats for Venetian Blinds," published in INDUSTRIAL FINISHING for July 1939, page 24. Can you send me the names of companies manufacturing this machine? —G. A. Co. (Research Laboratory).

Information has been supplied.—ED.

Finish for Cellulose Acetate

In reply to a request under the above title, page 67, July 1939 issue of INDUSTRIAL FINISHING magazine,

"TOPS"

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TOPS air dries fast as lacquer. Single coat guaranteed equal in body to any two-coat lacquer job. It's as tough as lacquer and is both alcohol and water resistant. Offered exclusively by . . . . . .

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wherein P. & T. Co. asks about a finish for cellulose acetate and Tenite, wish to say that we have such a finish and it has been successfully used in large production.—Red Spot Paint & Varnish Co.

Book Cover Finishing

In letters from the readers, we note with interest a letter in July 1939 issue, page 9, inquiring about "Book Cover Finishing." If this firm "F. I. & A." is closer to St. Louis than Chicago, we would appreciate having their name, since from our experience we have found that our Moorish Paste for books covers has been irreplaceable outside of Chicago. We feel that you would be doing your reader a favor as well as ourselves in allowing us to contact them.—U. S. Lacquer and Chemical Co.

Hood Respirator

In your February issue of 1938, we are very much interested in the article on page 20 describing the Hood Respirator for spray painting. This respirator had attached to it, an air line which provides air pressure inside the helmet, thereby eliminating all of the paint fumes.

If you are able to give us the name of a manufacturer of this equipment we shall be glad to have same, as we are interested in equipping our spray booths with this same type of equipment.—E. A. Co. (Automotive Service Equipment).

A product of DeVilbiss Co.—Ed.

Rubbing Lacquer Finish

In May issue of Industrial Finishing you had an article on "Rubbing Formula for Lacquered Surface" (page 32). Will you please let us have the name of the chemical company that is selling the necessary materials for that rubbing? This article has been very interesting to us and we would like to try the method described.—M. Furn. Mfg. Co.

Information has been sent.—Ed.

Prevents Termites

In your May issue, page 67, is an inquiry from the S. G. Co., who are interested in a preventive against termites. Enclosed are several of our folders in which we recommend "Av-

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enarius Carbolineum" for termite repelling purposes, and we would appreciate your sending one of these to the S. G. Co., or you can give us their name and address and we will write them direct. — Carbolineum Wood Preserving Co. (Preserves Wood Everywhere).

Beer Can Finish

Would appreciate any information you can give us as to the type of material, method of application and supplier for the coating used on the insides of beer cans.—W. Prod. Co.

Flock Finishes

Kindly supply us with the name of the various companies that specialize in the so-called "Flock Finishes," as per write-up on page 49 of the June copy of INDUSTRIAL FINISHING.—A. T. Co. (Furniture Trimmings).

Please forward copies of November, 1938, and March, 1939, issues of INDUSTRIAL FINISHING, and any others which have articles on flock and flock finishing. If possible, please advise what organizations produce flock finishes for wood, metal and other specialties of this type in commercial quantites — these organizations being located preferably in the Middle West and East.—O. A. Products Co.

In the March issue of your magazine you have devoted space to the subject of flock. There are quite a few things I would like to learn regarding that subject; for example. (1) Where can a machine that cuts this rayon, cotton and wool flock be purchased? (2) Where is the best place to buy this raw material? (3) With the machine, is there much work besides feeding the material to the machine and, of course, the necessary dying?—A. M. Co. (Factory Wastes of All Kinds).

Glue for Hardwood

We are having difficulty in finding a suitable glue to use in fabricating a Brazilian wood known as "Brownheart." We have tried Caesin glue, hot hide glue and liquid glue. None of these glues will make a joint that we can depend on holding. "Brownheart" is a very heavy hardwood and, we understand, contains a lot of tannic acid. If this is what is causing the trouble, we do not know. While this hardly comes within the

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scope of INDUSTRIAL FINISHING, we thought you might put us in touch with some glue manufacturer who might be able to solve our problem. —O. R. Novelty Co. (Designers and Mfrs.).

Graining Metal

One of my customers is interested in graining metal cabinets and has asked me to obtain for him as much information on this subject as is available. On page 9 of your July issue I note you have forwarded tear sheets to another subscriber on the same method of finishing, and I would appreciate your sending me similar data.

Your publication is most interesting and helpful and I look forward to each issue.—F. H. B.

Tumbling Lacquer

Will you kindly advise us if any of your readers have secured a satisfactory paint or lacquer finish for tumbling such items as long broom handles or long rake handles in a tumbling barrel? If you have any information along the above lines, we would certainly appreciate your advice.—F. & H. Co. (Forks, Hoes).

We manufacture educational toys, games, gifts and selected wooden novelties. Our present methods of finishing are not all that they could be, as regards time required or handling. Please advise sources of supply and methods of using tumbling varnishes or lacquer or substitute. Our setup, in many particulars, is the same as the one described in April issue of INDUSTRIAL FINISHING, page 56, under the heading "Tumbling Bent Wood Handles." —K. Y. Co.

Silk Screen Stencils

We are very much interested in the answer you gave on silk screen stencils to the W. I. Co., as outlined on page 4 of August, 1939, issue of INDUSTRIAL FINISHING. Would you kindly send us all information and names of manufacturers of silk screen stencils?—E. T. Co. (Electrical Instruments).

(Continued on page 66)

Finishing Furniture Along

Sanding the wash coat, following 35 minutes of air drying on conveyor line. The workmen use No. 5/0 sandpaper on both hands, holding it in place with light dabs of tacky varnish.

BY
W. H. ROHR

Photographs and floor plan, courtesy of Palmer-Bee Co.

THE COMPLETE FINISHING of furniture on a conveyor line is no longer a dream or an experiment. It is an accomplished fact. The finishing departments of several furniture factories have been more or less conveyorized. This mechanization of all transferring and handling of furniture in process offers many economies in labor and time. It makes possible the uniform timing and maintenance of predetermined schedules for all productive operations and for all drying periods—therefore the finish on every piece of furniture is uniform. The work moves steadily forward with clock-like precision; the pace is set mechanically and less supervision is required. Also, since every piece moves along in the clear on an individual carrier, no damage occurs to any partly or completely finished surface.

Modern conveyor installations are in satisfactory operation in each of the four plants owned and operated by the Lenoir Furniture Corp., Lenoir, N. C. One of these conveyors is operating in a 2-story brick building which houses the complete finishing, hardware fitting and packing de-

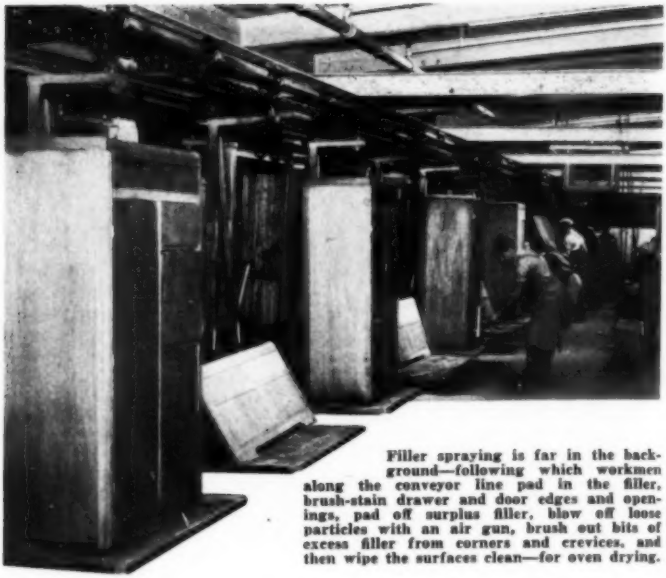
the Conveyor Line . . . .

partments. The arrangement of equipment and space in the 80x160-ft. building is such that changes can be made in the product and in the finishing schedules, operations, materials used, drying times, intermediate work, and number of men employed. Everyone who is progressive recognizes that future changes are likely to be desirable or necessary, perhaps on short notice, and this fact was wisely taken into consideration by the conveyor engineers and company management.

The conveyor is nearly half a mile long but it doubles back and forth several times as it carries furniture through seven spray booths, two drying ovens and several intermediate work stations such as those for sanding wash coats and sealer coats, working in and removing excess filler, cleaning surfaces with the air gun, etc. Furniture is not lifted from the carrier trays, nor does it stop moving, from the time it is loaded in the cabinet department until it is taken off after having left the final varnish oven.

The conveyor delivers 520 tray loads per 8-hour day. The system is designed on the basis of each tray load averaging 125-lbs., and they probably do average close to this weight. However, if they average only 100-lbs. each, this amounts to 26 tons of furniture per day. Think what it would mean for the workmen to be lifting this tonnage on and off six spray turntables every day, and pushing and pulling so much furniture over the floor from one work station to another, and into and out of the drying rooms. It would certainly require more than 35 men now employed on all operations and maintenance work along the conveyor line. (A total of 60 workmen are employed in the building; the others are accounted for in the rubbing, buffing, polishing, hardware fitting, final inspection and packing operations which are not directly conveyorized.)

What kind of furniture is finished on this line? Bedroom and

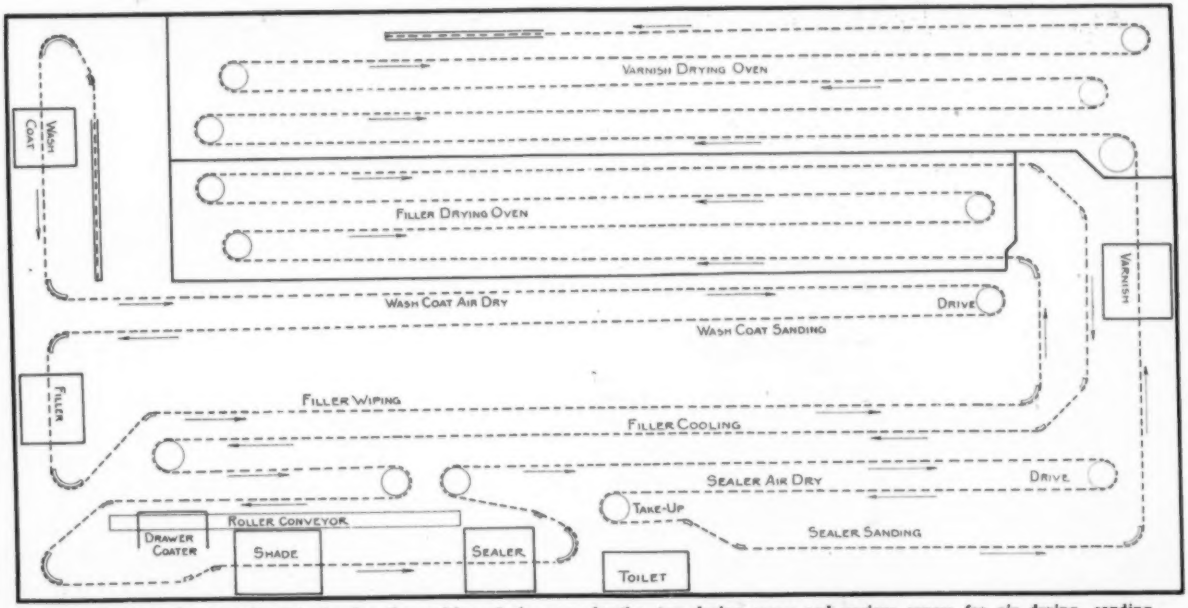


Filler spraying is far in the background—following which workmen along the conveyor line pad in the filler, brush-stain drawer and door edges and openings, pad off surplus filler, blow off loose particles with an air gun, brush out bits of excess filler from corners and crevices, and then wipe the surfaces clean—for oven drying.

dining room suites — everything but the chairs, which are made and finished in one of the company's other plants. Finishes include the modern blonds and medium toned effects in natural walnut, mahogany and other fine cabinet woods; also, some of the darker period style finishes. These are put out in the rubbed-buffed-polished finishes and in full gloss luster. At this writing most of the furniture is being finished in varnish. The equipment and facilities in the finishing department are such that the furniture can be finished in a synthetic baked varnish which can be rubbed two hours after leaving the oven, an overnight drying varnish (following oven drying) or a lacquer material.

All veneered work is manufactured in the company's own plant, the adhesive used being a synthetic resin. This "Tego Uformite" plywood is all put up in hot plate presses to produce remarkably smooth surfaces which are unharmed by any finishing material or high temperature drying. Before any furniture leaves the cabinet department it is doubly inspected and all defects and places needing attention are expertly repaired so that only perfect surfaces in the white go on the finishing conveyor line.

A fairly accurate picture of the type of conveyor used and the entire floor plan layout of the installation can be obtatined by referring to illustrations in this article. The low hung carrier trays measure 28x52-in. and are spaced 80-in. apart on centers; trolleys are 40-in. apart. The conveyor has two 46-in. driving sprockets located at different points and each one is driven by



Plan of second floor (80x160-ft.) showing the position of six spray booths, two drying ovens and various spaces for air drying, sanding, filler wiping and cleaning in relation to the conveyor line which comes up from the first floor at a point near the wash-coat spray booth.

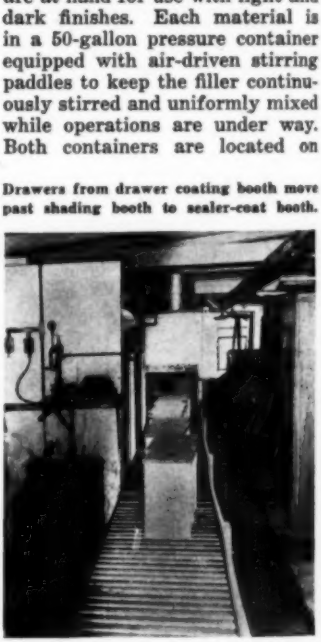
A typical piece of furniture finished on the modern conveyor system in this plant.

a 1-hp. motor. Between the large driven gear and the driving sprocket, both of which rotate on the same shaft, there are two shear pins. In case of a "jam" anywhere on the line, the sudden extra load shears off these pins and stops the conveyor—a wise safety precaution. New pins are easily and quickly replaced. The speed of the conveyor can be varied to suit various conditions. Its present rate of travel is about 7-ft. per minute.

Spray booth No. 1 is on the first floor near the door where the conveyor enters through a passageway to the cabinet room. Usually at this booth walnut furniture is sap stained and mahogany pieces are uniformly stained. Non-grain-raising stains are available for both types of staining so that a change from one to the other can be made instantly. This quick-drying stain dries thoroughly during the 16 minutes that it takes the conveyor to travel to the No. 2 wash coat booth on the second floor. Here the walnut pieces are sprayed with a combination stain and shellac wash coat. Mahogany pieces are given a straight wash coat of shellac. The thin wash coat is allowed 35 minutes of air drying, accelerated by overhead fans, before hand sanding begins. Workmen use No. 5/0 sandpaper to hand sand the dry wash-coated surfaces as the furniture moves along the line. Ten minutes of conveyor travel is allowed for wash coat sanding.

Next comes the filler spray booth where two kinds of filler are at hand for use with light and dark finishes. Each material is in a 50-gallon pressure container equipped with air-driven stirring paddles to keep the filler continuously stirred and uniformly mixed while operations are under way. Both containers are located on

Drawers from drawer coating booth move past shading booth to sealer-coat booth.



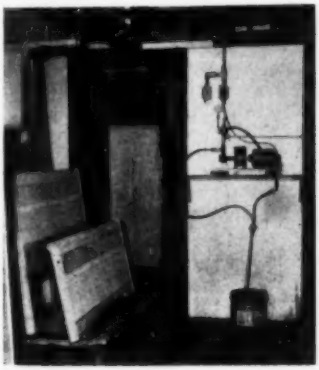
the first floor directly under the filler booth and each one has a line of material hose extending to a spray gun.

Near the discharge end of the filler spray booth a workman quickly pulls drawers from case goods, brush stains their edges and the edges of openings, replaces the drawers and proceeds to "pad in" the filler with a pad made of long-fiber tow. Surplus filler is then wiped off with clean long-fiber tow which, the foreman declares, is much more effective, more rapid and cleaner than the cheaper short-fiber tow. An air gun is used to blow off loose particles of filler left on the surfaces.

Bits of filler that remain lodged in corners and crevices are carefully brushed out and then blown off with an air gun. Finally, each piece is closely inspected and thoroughly wiped with clean wiping rags. This work is all done while the furniture is traveling along the line. Of course, where two or more light weight pieces are on a single tray—for example, bed ends, mirror frames, etc.—workmen may shift the position of these pieces, and in some cases may even remove them to trestles alongside the line, in order to handle them more conveniently.

Cleaning wardrobe cabinets with air gun before they enter the sealer coat booth.

Tray loads of furniture coming through the wash coat spray booth on first floor.



By the time all surplus filler has been completely cleaned from the surfaces, the conveyor is approaching the entrance to the filler oven. Furniture enters the oven 19 minutes after the filler has been sprayed on. Inside the 120-ft. oven the conveyor doubles back and forth to make four complete passes lengthwise before it reaches the exit. This requires about 70 minutes. Oven temperature, humidity and air circulation are accurately controlled and

maintained within close limits, the temperature being 135°F. and relative humidity 25% to 30%.

A period of 40 minutes of conveyor travel is allowed after oven-drying the filler to permit the furniture to cool and become again adjusted to the workroom atmosphere. By this time the work in process has arrived at the drawer coater spray booth where all case goods drawers are removed, sprayed with quick-drying drawer coater and placed on a gravity roller conveyor which carries the drawers to the sealer coat booth.

Everything other than drawers continues on the main conveyor line, passes through a shading booth and on a short distance to the sealer coat booth. Drying time for the shading spray is only three to five minutes. Before the sealer coat is sprayed, all drawers are replaced in cases and the work in process is given a complete and thorough blowing off with an air gun to remove any dust or dirt that may be present.

The sealer coat is sprayed and allowed to air-dry on the traveling conveyor for 35 minutes before sealer sanding begins. Ten minutes is allowed for this sanding . . . . with No. 6/0 sandpaper. Then follows a final and thorough cleaning with an air gun and wiping cloths before the work enters the last spray booth where a full coat of varnish or lacquer is sprayed on.

Most of the goods are finished in varnish. A period of three minutes is allowed for "varnish flow-out" before the conveyor enters the varnish drying oven. Here the conveyor doubles back and forth to make 4½ passes lengthwise through an oven of about 140-ft. in length. The period of time in the varnish oven is 1¼ hours; the temperature 150°F.; humidity, 35%.

Leaving the varnish oven the conveyor makes an inclined descent to the first floor and passes along a platform which is only about 3-in. below the level of the trays. At this point one man easily transfers the furniture from conveyor trays to the platform and slides it down a gentle incline to the first floor where plenty of space is available for temporary storage while the finished surfaces become cool and dry hard preparatory to rubbing, buffing and polishing.

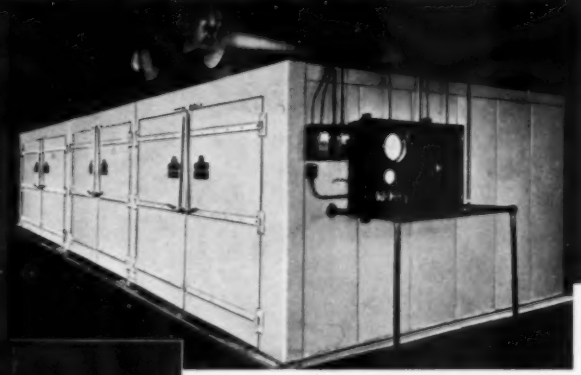
Two types of rubbing machines are employed — a large long-stroke machine for rubbing table tops and bed ends, and several portable reciprocating machines for the smaller surfaces. Rubbing is followed by buffing with sheep's wool discs driven by portable electric machines. Two grades of buffing wool are used on each piece, the first one being applied after a buffing compound is sprinkled over the finished surfaces. The second buffing wheel gives the work a light dry buffing; then follows a thorough wiping off and polishing with dry waste.

Finished furniture is carefully inspected, hardware is put on, it is packed in cartons or crates, and placed on another conveyor of the same type which passes through the warehouse and on to the shipping platform.

In addition to the seven spray booths on the conveyor line (one on the first floor, six on the second floor) there are two general utility spray booths on the first

(Continued on page 61)

OVENS



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With Flexible Bakelite Coating

★METACEL
Metal Foil Backed Tape

TEXCEL
Transparent Tape

•

Samples on request

Near Infra-Red Heat

FOR DRYING FINISHES ON METAL SURFACES

This article is in reply to many inquiries asking for practical and authentic information about the use of infra-red electric lamps for supplying heat to dry finishes on metal surfaces in production.

BY ROBERT W. MORRIS
General Electric Company
Nela Park Engineering Dept.

A small experimental installation of 250-watt tungsten - filament drying lamps over a conveyor on which metal drawers are drying after painting.

JUST as there is more than one way to skin a cat, there is more than one way to dry a dishrag. For example, you can put it on top of a warm oven, or actually in the oven, or you can hang it on a clothesline out in the sun. In almost any kind of drying, heat, regardless of how it is applied, is necessary. Heat speeds up the rate of evaporation of whatever liquids are to be driven off.

We can dry a dishrag by putting it on top of a warm oven because when a heated object touches a cooler object there is a transfer of energy; the heated object loses some of its heat and the cooler object acquires some of this heat. This is heating by contact.

The dishrag that we put in the oven to dry is heated and dried by convection. In a sense this is really contact heating, for it is contact between the dishrag and a stream of circulating warm air that heats and dries the rag.

When we hang the dishrag in the sun we are counting on radiation of the sun's energy to produce heat and effect drying. The radiation that is absorbed by the rag is converted into heat.

Most drying processes, to be sure, combine two or even all three of these methods of drying. For example, in an oven most of the heating is done by convection, but a certain amount of it is done by radiation too. The heating elements and the inside surfaces of the oven radiate energy which is absorbed by the object that has been placed in the oven for heating.

Of course you may not be particularly concerned about the best way to dry a dishrag. But the same general principles are involved in the drying of most of

the paints, varnishes, lacquers, enamels, and other liquid finishes that are applied to the surfaces of all sorts of manufactured articles.

In drying various types of surface finishes convection heating has been the chief method used for many years. Contact heating has been ruled out in most cases by the fact that it is usually difficult to bring a heating element into contact with a freshly-painted or lacquered surface without marring the finish. Radiant heating, for the most part, was overlooked because it was considered inefficient and expensive.

It was not until a few years ago that experimentation with radiant energy drying was initiated at the Ford Motor Co. plant in Detroit, Mich.* These experiments employed incandescent lamps as the radiators of near infra-red energy. The problem was to dry lacquer and synthetic-resin enamel body finishes in less time than was required by the huge steam heated ovens that had been used for many years for this purpose. The results of the experiments at the Ford plant led to the adoption of radiant energy drying on a large scale in this plant and to active experimentation with infra-red drying in various other industries.

Development of Infra-red Drying Lamps

A recent development for such applications is a new tungsten filament lamp. Contained in a standard PS-30 clear bulb, the lamp is a 250-watt device designed for long life and relatively low output of visible light. It is ruggedly made so that it can readily stand the shocks and vibrations incident to drying service. Ordinary incandescent lamps may serve very well as drying lamps, but since they are designed primarily as light sources they are not so well adapted to drying as the lamps designed specifically for that service.

Drying lamps have a color temperature of 2500°K instead of around 3000°K and this means that a greater percentage of the energy that they radiate is of wave lengths that are most effective in drying—that is, those in the near infra-red region of the spectrum. It also means that the drying lamps have much longer lives than have the ordinary lamps designed to live 750 or 1000 hours. Actually, in service, these tungsten filament drying lamps are found to live many thousands of hours.

It has been found in some cases that near infra-red drying with filament lamps, when used on lacquers and quick-drying enamels, has required only 5% to 15% of the time required by previous methods. Under near infra-red heating, air-drying and semi-air-drying finishes, such as synthetic lacquers, can be dried enough to permit handling in less than three minutes. At the end of 15 minutes these finishes have attained a hardness equal to that produced at the end of one hour in a bake oven at 300°F.

Results Depend Somewhat On Finishing Materials Used

Of course, there are many varieties of enamels, lacquers and paints, and for this reason it is extremely difficult to make inclu-

*The Ford Motor Co. holds Patents No. 1,998,615 and No. 2,057,776 relating to radiant energy drying.

sive statements regarding the results that are likely to be obtained with near infra-red drying. As is usually the case with new methods and new techniques, the most satisfactory ways of putting them into practice are often determined by trial and error. There is no doubt that considerable experimenting remains to be done.

Temperatures as high as 600°F. have been produced experimentally on wheel finishes, but more typical temperatures range from 250° to 300°F. Among factors that affect the temperatures that can be produced by drying lamps are: The distance from the lamps to the objects being dried, the wattage employed, the diameter of the reflectors, and the pigment and vehicle of the finish.

Where radiant energy drying offers advantages, these usually consist of a saving of time, space, and expense, and often, in addition, a better job. Radiant energy drying equipment may be installed over many types of conveyors and hence it is often possible to dry articles as they are conveyed from one operation to another. Where this procedure replaces drying in which articles must remain stationery (after waiting their turns) the saving in time and cost of production may be considerable. Further, radiant energy drying lamps can be turned on or off as they are needed—and there is no warm-up period necessary before they can go to work.

One fortunate characteristic of infra-red drying is that the drying occurs either from the inside out or at least evenly through the cross section of the paint or lacquer or other finish. This eliminates a difficulty sometimes encountered with other drying methods—a surface film that forms and makes the finish appear dry while actually it is still wet next to the surface on which it has been applied.

While they are wet, typical lacquers (and the same is true of many paints) have their greatest absorption in the visible and near-visible region of the spectrum. This means that any device used to dry these lacquers will be most effective if most of the energy it radiates is in the visible and near-visible regions. Heating not only vaporizes the volatile part of the vehicle but also brings about a chemical reaction which cures or sets the film. For a given amount of radiant energy delivered upon a lacquered or painted surface that is being dried, the speed or effectiveness of drying depends, to a large extent, upon the reflecting characteristics of the pigment.

Proper Reflectors Are Essential for Good Results

The proper reflecting equipment is as important for infra-red drying lamps as for standard lamps used for lighting. Accurate control of the energy output is essential, and parabolic reflectors are generally used to keep the heat rays in a more or less concentrated beam. Efficiency, maintenance, and cost are the important considerations in selecting a reflector for drying, just as they are for lighting.

So far as materials are concerned, electrolytic gold appears to be well adapted to reflecting near infra-red radiation, although copper and silver painting are very nearly as good initially. The difficulty with these last two is

that they tarnish quickly. Alzak aluminum reflectors give fairly satisfactory results. Reflectors must be cleaned about every six weeks when they are used for drying lacquer. The usual technique in mounting the reflectors is to mass them as solidly as possible, that is, to have them touching rim to rim.

It is really remarkable how well efficient reflectors confine the heat to the area where it is desired. Indeed, it is possible to place one's hand on the back of a reflector during operation without discomfort. This is a tremendous boon for those who must work close to the drying operation.

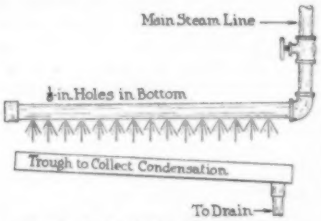
Humidity in Room

DURING winter time the steam-heated finishing rooms of woodworking factories, in localities where outside temperatures range between zero and 30°F., will have a relative humidity sometimes lower than 15%.

This atmospheric condition has four bad effects: 1) It sets up, in the wood, excessive internal strains that are conducive to checking and warping. 2) Some types of finishing materials will not dry properly. 3) The atmosphere will be heavily laden with solvent fumes. 4) Excessively low humidities are unhealthy; men working under these conditions are more susceptible to winter colds.

A simple and convenient means of increasing the percentage of moisture in the air is to arrange for pin-point jets of steam to escape at various localities in the room. The accompanying sketch illustrates one practical application of this principle. Here a short length of horizontal pipe, perforated at the bottom, is connected to the steam line. You include a control valve and a galvanized or copper trough to catch the condensation, which can be piped to a drain, as shown.

Movement of the air by the spray booth exhaust fans is usually sufficient to distribute the moisture-laden air (near these steam jets) throughout the room although auxiliary fans are sometimes necessary or desirable. In large rooms, several of these units should be installed. With the introduction of added moisture into the excessively dry air, the first and most noticable effect is the immediate disappearance of the heavily-laden odorous atmosphere. Subsequently, you will notice less checking and warping of wood products in the finishing department—and finally less time lost by workmen.—T. J. PIRRUNG.



Simple device to humidify room air.

Wm. C. Schaefer Dies

Mr. William C. Schaefer, one of the organizers of The Schaefer Varnish Co., Louisville, Ky., died at his home in Indianapolis, Ind., August 7, 1939. Prior to the organization of The Schaefer Varnish Co., in 1926, Mr. Schaefer had spent 15 years traveling for the Sun Varnish Co. of Louisville, Ky., in the Indiana territory.

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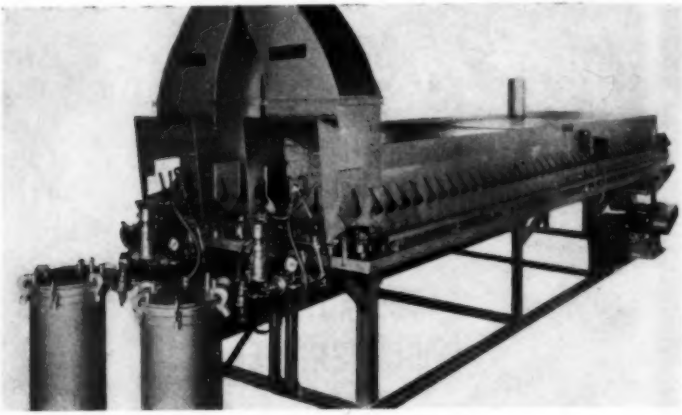


Production Finishing of Br

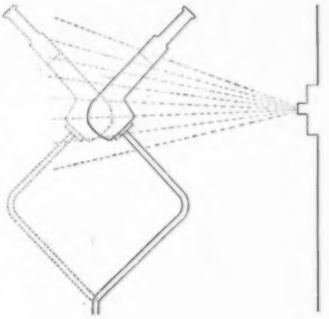
THE SMOKER'S briar pipe presents one of the highly specialized problems of the wood finishing field. The finish on a pipe must present a satisfying urge-to-buy appearance and, once the pipe goes into use, it is continually subjected to a type of service that puts it to some unusually severe tests.

Briar root, originating principally on the shores of the Mediterranean Sea, is received in the form of blocks about the size of a man's fist. These blocks are carefully air dried and then shaped on copy lathes, chucking machines and variety shapers of special design. Various types of belt and pneumatic sanders are used to perfect the final smooth surface.

Briar root is expensive and varies widely in grain and texture, in addition to showing frequent checks and knots. A straight or "flame" grain is most desirable and, in a perfectly sound state, this forms the best grade of pipe. Sound pipes of a less striking texture form the next grade, while pieces with small checks, pits and open defects that can be puttied comprise the low priced group.

Careful consideration of the size, grain and shape of the stock determines the style of pipe to be made from it. Pipes slightly damaged or those that show up slightly defective during the course of shaping are frequently reworked into smaller models.

Many pipes developing surface cracks, pits, knots or discolorations in the process of manufac-



Left: An automatic spraying and drying machine in operation finishing briar pipes. It applies two coats of lacquer, each followed by a period of drying in a heated chamber. Photo. courtesy of the Paasche Airbrush Co.

Right: Author's sketch of pipe on revolving holder, showing two different positions in line with one of the spray gun nozzles pointed toward the work.

BY W. T. SMITH

# of Briar Smoking Pipes . . .

ture are salvaged by using them as rough or "shell" briars, or in various novelty effects combining the rough finish with smooth areas in symmetrical designs.

The puttying operation, performed on all culled smooth pipes below the best grades, is employed to fill all cracks, checks and small knot holes. It is a problem to secure a wood putty which will not shrink under the heat of the pipe's use and which will, in some measure, accept the stain in such a manner as to render the repair inconspicuous. Performed just before the final sanding, the puttying permits the leveling of the repair in the final smoothing.

Bits, ferrules and inserts are purchased parts. The rubber bit is the most commonly used; it comes in a rough moulded form and each pipe is individually fitted with one before final sanding. Each pipe thus carries its own bit through succeeding operations where it is sanded and buffed to perfect conjunction with the wood part.

Staining the Wood

Staining the briar pipe, as in all wood finishing schedules, is the critical operation and one that fixes the individuality and character of the result. Pipe manufacturers are reticent about their staining operations and the preparation of their stains.

Finished colors range from very pale and "natural" to almost black and very deep shades of red and brown. In the past year "painted" or enameled pipes in

rather startling shades of red and purple have made their appearance. They are a conventional briar of good quality and are designed, presumably, for the collegiate trade.

Staining is a dip operation—usually followed by wiping—using, for the greater part, spirit dyes or the "non-grain-raising" types of stain. A few makers still adhere to the use of water stains. A great deal of effort is expended in attempts to bring out, in striking undertones, the beautifully figured and "flame" effects prominent in fine quality briars. Toward this end the old cabinet finisher's trick of a double staining is often used. A bright sharp toner is followed by a deeper overtone stain. The contrasting texture of the natural figure does the rest, especially when supplemented by a judicious w i p i n g operation. Many "spirit off"—that is, wipe the stained pipe with a rag saturated with alcohol—to alleviate bronzing tendencies and to bring up the highlights on the harder grain in the wood.

One interesting variation of staining technique (one of many) is that of taking the stained pipe and applying it to a muslin buff wheel with a generous application of cutting compound. The buffing operator cuts the stain practically all off the surface, but leaves the figure of the wood sharply outlined by the remaining s t a i n which has penetrated deeply into the softer texture and the natural microscopic i n t e r s t i c e s of the wood. The result is a pipe of practically natural color but with its figure strikingly outlined and emphasized. Due to the deposit of greasy buffing compound on the surface, it is usually impractical to lacquer such pipes, therefore shellac polishing is resorted to.

Pigment wiping stains, which are ordinarily well adapted to the development of wood character, have not found a prominent place in pipe finishing. In general, they will not stand the heat imposed on a pipe in use and tend to induce blistering. The staining, like all other early operations, is followed by a close inspection for the detection of irregular coloring, white spots from puttying, chips, cracks, etc. Stains are dried from several hours to overnight, depending upon facilities and the type of stain used.

Coating; Shellac; Lacquer

The conventional briar pipe finish is achieved in one of two methods—that of shellac polishing or by lacquering. It is probably safe to say that the lacquered product (two spray coats and buffed) enjoys a considerable majority. The polished or shellaced pipe enjoys much the same position as the oil-finished gun stock, in that some smokers prefer the duller "close to the wood" finish —being a mark of conservative quality as opposed to the glossy sleekness of a popular priced product. Another reason for adherence to hand polishing is its adaptability to odd-shaped pipes which do not easily lend themselves to conventional production procedure. Pipes on which the stain has been "scoured" off for special coloring effects are often finished with a shellac polish because of a persistent refusal of lacquer to adhere to the surface left by the cutting compound.

This hand polishing is similar to the old French polishing sys-

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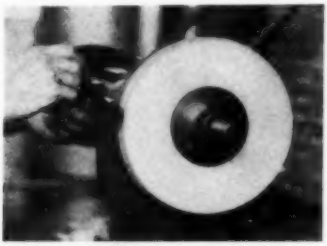

Polishing final finish on buffing wheel.

tem. It produces a high luster, close-to-the-wood finish at a very low unit cost. The exact process is surrounded by more or less secrecy on the part of the users, and involves various pet formulas. In general, it consists of a shellac solution containing some wax which is applied in a dab to the work and then polished on a loose muslin wheel. An expert operator will turn out as high as 100 pipes an hour by this method. Unfortunately, the high polish is relatively fugitive, dulling down quickly under the heat and handling of use.

Cellulose lacquers for pipes are of a highly specialized nature and are supplied to the trade by a relatively small group of manufacturers who have made a specialty of their development. The leading types are fully covered by patents.

In general, pipe lacquers are of low solids content and high viscosity, and are applied in a 2-coat system for buffing. Several significant and peculiar problems confront the maker of a pipe lacquer. The material must have ample body to afford a full smooth finish in two coats; it must flow quickly and smoothly without runs; it must be completely resistant to blistering under heat and to bleeding of the stain, as well as offering resistance to perspiration and handling.

Automatically Sprayed

Many — probably the majority —of briar pipes are machine sprayed. Machines for this purpose are built by some of the leading spray equipment manufacturers and are remarkably ingenious and efficient.

The pipe, mounted on a suitable holder (usually a gooseneck terminating in a plug for the bowl opening) travels on a spindle on a link chain conveyor. For a short distance on the conveyor the spindle is revolved by a small pinion or friction wheel as it passes a suitably mounted spray nozzle with cam-operated valves. As the revolving pipe reaches a point opposite the nozzle, the fluid and air valves are opened by cams and the nozzle follows the pipe along the conveyor for a distance of about 15-in. or 18-in., or until the pipe has made three complete revolutions under the spray at a distance of about 6-in. to 8-in. from the nozzle. The mounted gun stops, the valves close and the gun snaps back to its original position for the next pipe.

On leaving the spray nozzle the pipe on the conveyor enters a drying chamber where it is subjected to a temperature of 115° to 125°F. for a period of four to six minutes. Since two coats comprise the conventional finish, the pipes may then pass another or the same spray nozzle and advance into another or the same drying chamber—depending upon the size and type of the machine.

Coating in this manner is at the rate of approximately 30

NEW!

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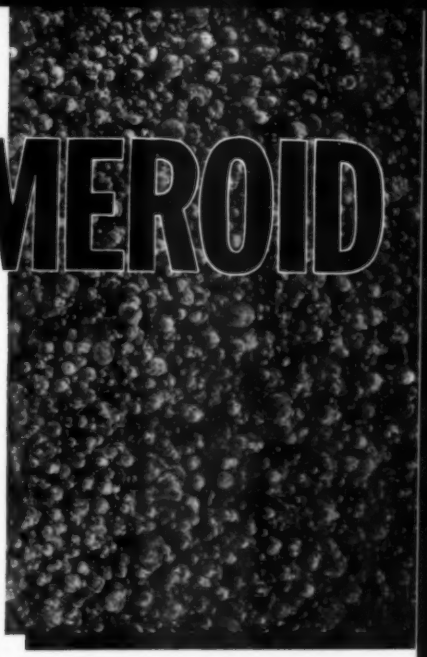

BY THE MAKERS OF

*POLYMERIN

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THE MAKERS OF POLYMERIN, the original speed-bake metal finish, have created a new hammered finish with many of the exceptional properties of Polymerin. The new finish, called POLYMEROID, is manufactured with a Polymerin base, and hence retains the characteristics of mar resistance, durability, heat resistance, and adhesion which Polymerin provides. In addition, it may be baked on a short schedule, and it is easily sprayed.

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The greater mileage of POLYMEROID makes it more economical to use than other types of finish used for similar applications. The unusual optical properties of this new finish cannot be appreciated without seeing an actual Polymeroid sample.

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makers of POLYMERIN, the original speed-bake metal finish

pieces per minute or 1800 per hour. The double machine, which applies and dries two successive coats without removal or handling of the pipes, will coat 14,400 pipes complete, ready for buffing, in each 8-hour day.

Careful adjustment of the air and fluid pressure, and a fairly close control on the viscosity of the material, enable the machine to apply a perfectly even wet coat without runs or dry spots. The first coat will penetrate considerably, leaving the grain and texture of the wood still fairly conspicuous. The second coat provides a full smooth surface which will buff to a perfect glass-like surface with relatively little effort.

Buffing Final Finish

Buffing of the lacquered bowl and the rubber bit, simultaneously, is done on a loose muslin buff in the conventional manner. The wheel is kept generously treated with a bar of buffing compound and the pipe is kept moving rapidly and systematically with considerable pressure until its entire surface is buffed. Most operators insert a finger in the bowl opening and twirl the pipe on the axis thus formed against the wheel. It is relatively easy to cut through the lacquer film, but operators develop great skill and speed in the operation and there is little rejection from any cutting through.

Following the cutting operation, the pipe is usually subjected to a "clean-up" or polishing on a dry wheel, or on one treated with a polish or cleaning compound to assist in removal of the greasy residue from the cutting compound. Various polishing processes are used according to individual preferance and practice. A correctly finished pipe, bearing a film of a good pipe lacquer will have a perfectly smooth mirror-like brilliant surface. In some cases the final polishing touch may be done entirely by hand, using a small amount of polish on a soft cloth as a preliminary to the final inspection and packing.

There is no little controversy and difference of opinion with regard to the "blister test." A lacquer that has a tendency to blister will almost invariably do so during the burning of the first two or three pipefuls of tobacco. The effect varies from perhaps one almost microscopic blister to a puffy lifting of the finish film from most of the surface of the pipe. The results of tests are sometimes inconsistent due to a variety of causes. Briar, like any other wood, varies in its structure, grain and texture. No two pieces, even from the same root, are exactly the same in texture and structural conformation. A very slight defect in the structure of the wood will often lead heat and gases from the burning tobacco to the surface of the pipe to cause a blister in any lacquer. There are other less obvious variables also; for example, the effect of the moisture introduced by the saliva of the smoker.

Despite conservative convictions to the contrary, the cellulose lacquer finish for the smoking pipe has much to recommend it. The freshly finished article, with its brilliant mar-proof surface, has a distinct eye appeal to the prospective purchaser and lends itself readily to attractive display by the retailer. A good pipe lacquer, properly applied, will endure for the life of the pipe. I have seen

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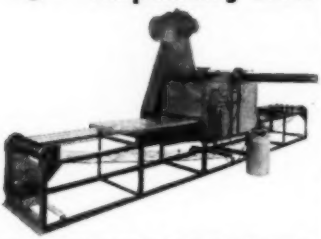

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Let our engineers show you how to coat your product automatically—better, faster and at less cost. Send samples and indicate production desired—no obligation.

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Paasche Airbrush Co.
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In Canada — A. R. Williams Machinery Co., Ltd., Toronto; Omer De Serres Ltd., Montreal.

used pipes which were completely burned out and cracked the full depth of the bowl, but the lacquer finish was entirely intact. A little rubbing with a soft cloth would restore its luster and make it look as good as the day it appeared on the retailer's shelf.

Acid Resistant Floor Resurfacer

"Harder than concrete, tighter than rubber," is what the Flexrock Co., 2300 Manning St., Philadelphia, Pa., claims for its new "Rockflux" floor resurfacer for concrete floors. A new 4-page bulletin describes and illustrates the use and merits of this new development.

Flexible-Shaft Tools

A new, low-priced line of flexible-shaft tools for grinding, polishing, buffing, rubbing, wire brushing and sanding operations, is announced by the Stow Mfg. Co., Inc., Binghamton, N. Y. The new line will be known as the Stow Junior . . . pedestal type with motor, extension cord and plug, flexible shaft and clamp spindle. Connection can be made with any light socket. The pedestal is adjustable in height, maintains a low center of gravity with consequent good balance, even in extended position, and carries a convenient tool tray.

Cleaning Polished Steel Before Plating

"The Cleaning of Polished Steel Before Plating" is the title of an interesting, illustrated 5-page feature article appearing in the May-June issue of Oakite News Service, nationally distributed magazine published by Oakite Products, Inc., 14 Thames St., New York, N. Y.

In addition to outlining the advantages of electro cleaning with high-density reverse current, the article describes a new material development that now makes practical in one operation complete removal of grease and smut from polished steel before plating. Known as Oakite Composition No. 54, the material is said to eliminate the need of degreasing, presoaking, emulsifying solvents and mechanical scrubbing or hand wiping required heretofore. Free copies of this informative article are available upon request.

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YING TO SCRATCH THIS
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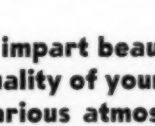

THE EGYPTIAN LACQUER MANUFACTURING CO.
ROCKEFELLER CENTER
NEW YORK

SOME TIMELY QUESTIONS AND ANSWERS

About Hot Lacquers

Interest in hot lacquer development has been stimulated by its use in a number of furniture factories. In discussions of the merits of this process, several questions have been asked. While answers to some of these questions are obvious to many readers, they are all logical and deserving of practical discussion. In this article the author presents, in question and answer form, some of the points that have come up, together with his answers and comments on same.

BY C. W. SIMMS
General Manager of Wabash Products Co.

Q. Can hot lacquers be formulated to yield flat or rubbed-effect films?

A. Perhaps the most striking results with hot lacquer have been obtained with rubbed-effect finishes. The exceptional flow of hot lacquers produces finishes so smooth that they closely resemble a rubbed finish.

When hot lacquers first came on the market several people declared that one of their limitations was that they could not be made "flat." It is true that the flattening of hot lacquers must be done with agents which are unaffected by high temperatures, therefore common flattening agents, such as aluminum stearate, cannot be used. However, many flattening agents are available which produce films with varying degrees of flatness. Some of these agents produce films having definite advantages over conventional cold flat lacquers.

Q. Is the shrinkage of hot lacquers greater than those of cold lacquers?

A. One of the objections to hot lacquer is the belief that a film of lacquer applied hot will shrink more than one that is applied cold. Based on pure logic, a lacquer having 27% solids, when applied cold, is going to produce a film of a certain thickness which, when thoroughly dry, does not change in thickness. This film consists of only the solid components of the lacquer, therefore if the same amount of solid components are applied by the hot lacquer technic they are bound to produce the same film thickness when dry, and one cannot shrink more than the other.

As pointed out in a previous article on this subject, it was

shown that there is no essential difference in composition between the films produced with the hot lacquer technic and those produced by conventional methods. If such is the case it is obvious that after complete drying, or loss of the volatile ingredients, there can be no more change in the film than there is with cold lacquers.

It is true that several preliminary demonstrations of hot lacquer indicated objectionable shrinkage. In each case this was due to the fact that the lacquers used were formulated with high proportions of very slowly evaporating solvents which were not given ample time to leave the film before the rubbing operation. Thus, the effect produced was that the film had shrunk, whereas the same type of formulation would have produced exactly the same results had it been applied by the conventional method. This is unquestionably an example of faulty formulation, since it is unnecessary to use solvents that are any slower than those used in high quality cold lacquers. This may seem a rather broad statement but it is nevertheless supported by facts.

While it is true that hot lacquers, correctly formulated, will dry somewhat slower than cold lacquers, it is due entirely to the greater film thickness which is applied. This difference in drying time, however, is not noticeable in the latter stages of drying, but it is quite apparent immediately after application.

In view of this situation it is a fact supported by actual tests that properly formulated hot lacquers show no more shrinkage than cold lacquers of the same quality. Quite extensive tests have been conducted along this line by one of the large raw material producers, with the result that they have proved conclusively that hot lacquers do not shrink any more than cold lacquers.

Q. Are hot lacquers more resistant to cold checking than cold lacquers?

A. In most cases hot lacquers will be found to be more resistant to cold checking. Essentially there is no difference in this respect, since the films produced are or can be of the same composition. Cold checking of lacquers is largely dependent on the type of nitrocellulose; the higher the viscosity of the nitrocellulose, everything else being equal, the better the cold check resistance. Hot lacquers, due to their higher viscosity, can be made with higher viscosity nitrocellulose and can therefore be made more cold check resistant.

Q. Is the tendency to form pinholes and blisters much greater with hot lacquers than with cold lacquers?

A. I must admit there is greater tendency for pinholes and blisters with hot lacquer. At the same time I should also like to add that with proper formulation and correct adjustment of spraying conditions, this fault can be completely eliminated.

It is my opinion, as well as that of others, that this phenomenon is largely dependent on the degree of atomization of the material being sprayed. Obviously, a material which is applied in large gobs will trap more air than a material which is completely broken up before it hits

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the surface being finished. Since pinholing and blistering are produced by trapped air, which does not leave the film or which leaves after the film has ceased to flow enough to obliterate these marks, it naturally follows that enough reduction in the amount of trapped air will eliminate this fault altogether.

Pinholing and blistering, therefore, cause no trouble with hot lacquer because as faults they can easily and completely be corrected.

Q. Is the equipment used for applying lacquer hot very expensive?

A. One of the requirements for proper application of hot lacquers is that lacquer be furnished to the spray gun at an elevated temperature and under proper pressure. This is accomplished by the simple method of passing the material through a coil immersed in a thermostatically-controlled water or steam bath. Since the source of pressure is already available in most plants (that is, pressure tanks) it is only necessary to supply the coil type heater. Several makes of suitable heaters are on the market, as standard equipment and they are not expensive.

Were it not for the fact that the heated material has to pass through a hose to the spray gun, the heater would be all the equipment necessary. In passing through the hose, however, some cooling will take place. This cooling is not objectionable in continuous operation, as it can be compensated for by slightly increasing the temperature at the heating unit. On the other hand, with intermittent operation such as must necessarily be used in practically every case, it is necessary to furnish heated material to the spray gun at a constant temperature, regardless of whether the gun is idle or in actual operation. To accomplish this, some sort of a circulating system must be employed. It is fortunate that such circulating devices are available as standard equipment and are thus not expensive. A typical circulating unit includes a small motor and rotary-type pump that can be hooked into the line from the pressure tank to the heater, with a return line from the spray gun to the pump. Since the pump moves more liquid than is actually used it is easily seen that hot material will be available at the spray gun at all times.

Q. Has hot lacquer equipment been proved by practical application, or is it still in the experimental stage?

A. Equipment for the hot application of lacquer has been in continuous successful use commercially for some time. While it is true that the future will undoubtedly see some changes and modifications of present equipment, it is also true that present equipment is sufficiently well out of the experimental stage to permit its being used with trouble-free security.

Q. Is there a greater tendency for sags with hot lacquer than there is with cold lacquer?

A. On the contrary, there is a definitely reduced tendency in this respect. The rapid increase in viscosity of the lacquer in the spray cone accounts for this reduced tendency to sag. Less sag-

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ging means that work can be flooded without danger of refinishing or rejection by the inspection department. It also permits more flexibility in the type of films produced with the same lacquer and same finishing schedule.

Q. Is the mileage of hot lacquers less than that of cold lacquers?

A. Contrary to what might be expected, production runs with hot lacquer have indicated mileage at least equal to that of cold lacquer. About the only explanation that can be offered for this is the fact that a greatly reduced amount of spray dust is formed when lacquers are sprayed hot. With hot lacquer the viscosity of the material is so great after it leaves the spray gun that a goodly portion of material, which would normally go into the air as dust, actually hits the work to form part of the film. . . . Under identical spraying conditions hot lacquer will go as far as cold.

Q. Might the high temperatures of hot lacquer affect the woods used in furniture manufacture?

A. In reply to this question it might be well to again explain that hot lacquer has returned practically to room temperature by the time it has been atomized and traveled to the surface being sprayed, therefore, there is no danger of the temperature of the lacquer affecting the wood.

Q. Do hot lacquers have to be baked or dried at elevated temperatures?

A. Hot lacquers do not have to be forced dried in any way. The thickness of film applied does retard drying immediately after application, but on an overnight dry, drying has progressed as completely as with cold lacquers.

One manufacturer of novelty furniture is applying a very thick coat of hot lacquer and packing the goods in cartons six hours later. In every case, hot lacquer films can be rubbed after overnight drying—which is the best that can be done with cold lacquers.

Free Booklet on Bleaching Wood

An interesting and informative booklet that explains the purpose of removing wild unwanted colors from raw wood to be finished in blond and mild tones, has been prepared and published by Kenneth O'Meara, Holland, Mich. The booklet also reveals the details of certain methods of treating wood to remove objectionable color.

Jones-Dabney Co. Expands

The Jones-Dabney Co., Industrial Division of Devoe & Raynolds Co., and Wadsworth, Howland & Co., has announced removal of offices for the Eastern Division to its present eastern manufacturing plant in Malden, Mass. Last fall Jones-Dabney set up an industrial manufacturing unit in Malden for the eastern trade. The company then transferred Mr. J. M. Creager from Louisville, Ky., to take charge of manufacturing. He had been Assistant Production Manager in Louisville and now continues in charge of production in Malden.

To better serve the eastern trade, which includes New England and the Atlantic Seaboard, the company is now moving the sales offices to Malden. This makes the Eastern Division complete. Mr. George A. Litchfield, who has been Divisional Sales Manager at the Louisville Division, is being transferred to Malden as manager.

The Jones-Dabney Co. reports a substantial increase in sales over the same period last year. This increase is due to its acquiring several new industrial accounts as well as resin accounts. Regular accounts are somewhat ahead of last year, which also is a good indication of improved business conditions.

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Why Blue Haze on Lacquer Finish

We finish our caskets with one coat of sealer and three coats of lacquer, after which some are dull or rather what we call semi-dull rubbed, and others are polished.

First, we sand our lacquer down with No. 180 sandpaper, after which we rub it dull with 3/F pumice stone and oil. Then our caskets are put in stock until ordered. When we take them out of stock, after two or three weeks, the finish seems to have a film or a blue haze on it. This is easily removed, but after it reaches its destination, the same trouble or condition reappears. This blue haze does not appear when our work is polished.

What we would like to know is how can we clean our work so that it will not develop this discoloration, after the work has been in stock.—K. Casket Co.

Some of the probable or possible causes of your lacquer coating turning blue or blushing may include: 1) Exclusion of light, 2) fumes from artificial gas and air impurities, 3) use of rubbing oil that is not moisture-resistant (some oils will blush readily), 4) lacquer that is formulated with too much ester gum, 5) rubbing the finish before it is thoroughly dry.

There are several more, but I think these will cover this particular case.—F. R. BOYNTON.

Questions Answers

Your trouble is one that is frequently experienced when: 1) The lacquer is not hard enough at the time of rubbing, 2) the lacquer is not of the right type, or 3) too much heat is generated from the friction during the rubbing operation. To decide definitely which is the cause of your trouble would require more detailed information than that contained in your question.

Is your lacquer of the "royalty" or "non-royalty" type? Glossy or flat? What solid content? What is the drying time between your coats? How long does the last coat dry before rubbing? What is used to lubricate the No. 180 sandpaper during the sanding operation? How long after sanding before you rub? What kind of oil and rubbing pad do you use with the pumice stone? Is the rubbing done by hand or with a machine? What method do you use for polishing the work that does not "bloom", and how long after rubbing before you polish? These are a few of the questions that should be answered before your trouble can be definitely located.

Rather than wait for you to answer these questions, I will give you some general information about "blooming" of lacquer, in the hope that you can find the trouble and eliminate it. If you continue to have trouble, I suggest that you give me more details regarding your operations, as suggested in the questions above.

I will now consider each of the three principal causes of trouble

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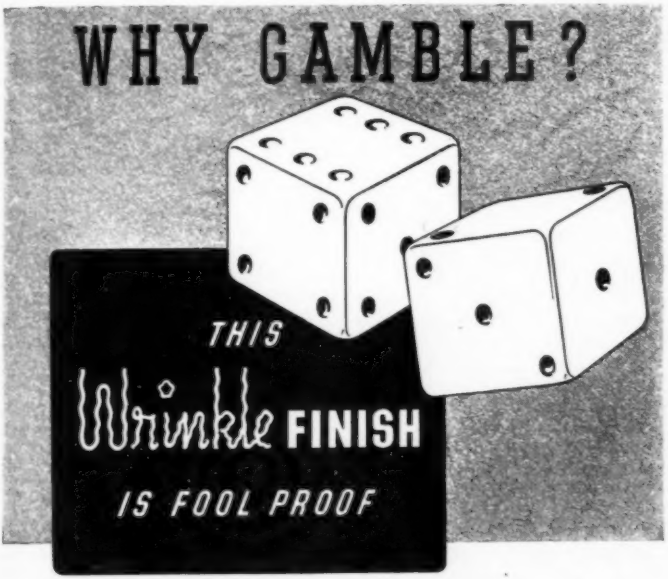

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mentioned in the first paragraph of this answer.

1) Insufficient Drying: While lacquer sets out of dust and appears to dry quickly, actually it does not reach its maximum hardness until some time after it is applied, because a certain proportion of the solvents are retained by the resin in the lacquer. The required drying time varies with the nature of the lacquer, the time between coats, the number of coats and the thickness of the coats. Generally speaking, where as many as three or four coats are used, the lacquer should not be applied more rapidly than two coats a day and the last coat should dry approximately 24 hours before being rubbed. Where all coats are put on in one day, at least 48 hours should be allowed before rubbing.

2) Improper Lacquer: There are great differences in the drying and rubbing properties of individual lacquers, depending upon the nature and proportion of ingredients used. Some resins have a greater tendency to retain solvents than others; sometimes the proportion of nitrocellulose or plasticizer is not right to give good rubbing properties; the solvents may not be properly balanced; "non-royalty" lacquers tend to bloom after rubbing more than "royalty" lacquers, as a general rule; flat lacquers are more likely to bloom after rubbing than gloss lacquers; and lacquers with a high-solid content are inclined to bloom more readily than low-solids lacquers.

3) Improper Rubbing: If the rubbing material is too coarse or if too much pressure is used, or if not enough lubricant of the right type is used, there will be a tendency for blooming—even if the lacquer is of the right type and is thoroughly dry. No. 180 sandpaper is rather coarse for dry sanding and would tend to scratch the finish deeply and soften it considerably. I would suggest that at least No. 320 paper, or better yet No. 380 or No. 400, be used. It should be lubricated with water or a mixture of water and gasoline or some similar lubricant.

The work should stand for some time after sanding, before it is rubbed with pumice and oil, to allow the softened lacquer to harden again. Not too much pressure, and a liberal amount of a "grease free" rubbing oil should be used on a felt pad that is not too coarse to prevent the pumice from being ground into the surface of the lacquer.

Conclusion: In brief, your trouble is probably due to fine particles of pumice stone being left on the work or perhaps ground into the surface of the lacquer. As long as traces of oil remain on the work, the pumice is colorless and the work looks clean. When the oil evaporates, the pumice turns gray and small traces of grease left by the rubbing oil sometimes make it look blue. Whether the cause is due to the lacquer itself, to the method of rubbing, to insufficient drying, or to a combination of these causes, cannot be definitely stated. Due to the fact that your polished work, which presumably stands for some time after rubbing and before polishing, does not bloom, I am inclined to feel that your lacquer is not dry enough when you rub it, and your rubbing operation is too severe.

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longer before rubbing, use a finer sandpaper or eliminate it altogether, and clean your rubbed work thoroughly with a good cleaner (like Furn-I-Pol, which removes all oils and pumice slush and leaves a dry clean surface) and I believe your trouble will disappear. If it is still with you after these efforts, you had better ask a reputable lacquer company to send you a different type of lacquer.—R. L. MASTERSON.

Dip Finishing Fish Bait

For the past three years I have been making artificial fishing baits such as are commonly called plugs. What seems to trouble me is how large manufacturers blend the color together and then have a transparent coating over all. I would like to know how different kinds of finishes are put on the wooden plugs. I have tried hand dipping but there always remains a half drop on the bottom of each plug.—R. S. H.

It is said that fish are color blind and, if in a mood to strike, will hit a green plug as readily as a red one; or they will hit anything that moves in the water. If this is true, then the colorful assortment of baits now offered is to please the fancy of the fisherman rather than to add to his catch. When we see the assortment in our own tackle box and consider the results that we sometimes get, we wonder if this might be true. At any rate finishing wooden baits is an interesting problem. A satisfactory method is as follows:

1) Rack baits on sharp nails protruding from a board.

2) Dip in a clear lacquer sealer to stop absorption of succeeding coats. This may be a fairly thin sealer, as it is not necessary to build up a film on the surface. It will drain off rapidly and should leave no drip. If a small drip does form, it may be eliminated by turning the rack over just before the lacquer sets so that the last drip will flow back and merge smoothly into the film. If the timing is right, the lacquer will then set before a "curtain" is formed and before a new drip can form at the opposite end.

3) For 2-color plugs, such as red and white plugs, dip one or, if necessary, two coats of a good grade of white dipping lacquer. Be sure that the lacquer was formulated for dip application, so that it will have proper flowing and covering properties. Two thin coats are better than one heavy coat, as they will flow off more smoothly. The work will be turned over, the same as for the sealer, so that the last drop will flow back into the lacquer film. If necessary, this drop may be removed with a soft brush, and the work then turned over. This should be necessary only for a very heavy lacquer.

4) After the last coat of white is dry (probably a minimum of an hour) dip into red lacquer. A stop or gauge may be used to dip just half way, or whatever distance the plug is to be tipped in red. Here again the work will be turned over just before the lacquer sets so that the drip will be absorbed in the film. One coat of red will suffice, as it is a much better covering color than white.

5) If a higher luster is desired, one or more coats of clear gloss lacquer may be applied, using the

same dipping method as for preceding coats.

It will be noticed that the work is racked once and stays on the rack until the last coat is dry. This saves considerable handling. As many racks may be made as are necessary to provide continuous operation. Racks may be made as large as desired, so long as they will fit into the dip tank.

Be sure that dip tanks have a tight fitting lid, so that a minimum of evaporation will take place when tanks are not in use. Even so, there is bound to be some evaporation and thinner must be added from time to time to keep the lacquer at the proper dipping viscosity. Use a good grade of lacquer; it is the most economical in the long run. The thinner is also important. It should be slow drying to allow proper flow, and will best be supplied by the manufacturer of the lacquer. The thinner can make or break the finish on a dip job.

6) Baits having say, a green back and white belly are made by dipping a solid color on the body and then feathering in the other color with a spray gun.

7) A fish scale effect may be produced by using a decalcomania, or by spraying through a piece of lace.

8) More expensive baits may have two or three coats of a clear lacquer containing essence of pearl which will give an iridescent finish.—R. JAY BURNS.

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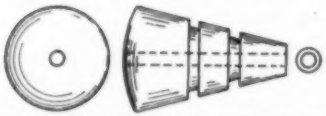
We have noticed on cheap glass tumblers, handled by the chain stores, a series of vari-colored horizontal lines, almost covering the entire glass at about ¼-in. spaces. There must be a quick method in applying these lines.

We have a similar problem on wood turnings the size of small screw driver handles, about 2-in.



The straight grooves in tapered turnings are to be striped in a contrasting color.

long by 1-in. in diameter. We have two grooves in the handle, which we wish to fill with a color other than the base color of the handle itself.

We are writing you in the hope that you can suggest a practical method of doing this work, or perhaps refer us to a firm making an appliance for such work.

We are mailing you, by parcel post, a few wood turnings which will perhaps help you in your reply.—M. D. Mfg. Co.

GLASS TUMBLERS—The several stripes running around the glass tumblers are applied by revolving the glass on a mandrel at about 50 to 100-r.p.m. and holding the striper against the surface, as you would a turning tool. To space the stripes equally, a stop gauge should be used. On cheap glasses this accuracy is not maintained; the operator soon becomes so skillful that he is able to space the stripes free hand.

SCREWDRIVER HANDLES — Striping grooves in the screwdriver handle, or on any round handle is a different problem. It is necessary that the striper wheel be made to fit the groove, and the grooves must be kept fairly uniform if a uniform stripe is required. A round groove is, of course, the easiest to fit to, but in any case the wheel must be made to order and a sample of the product should be sent to the manufacturer. When striping handles remember that they will have to be revolved in a lathe or spinning device.—Beugler Mfg. Co. (Striping Tools).

If these grooves are not uniform in width or otherwise adaptable to the use of a striping tool, and if you haven't large quantities of them to stripe, you might arrange a set-up whereby one or more girls could do the work with striping brushes.

Rotate one or more handles at a time, slowly by power, while a girl comfortably seated on a stool, skillfully lays in the color stripes with a hand striping brush—using a reasonably quick-drying striping material fixed to a consistency that will not run after being applied. The girl will also have a clean cloth and thinner handy to wipe off occasional overruns. This operation can be made reasonably rapid by arranging a suitable device for quickly chucking and quickly releasing the turnings, and having everything handy (including good light) for the girl to work with.

These deep straight-sided grooves, with one side higher than the other side, makes this a difficult striping job. If your grooves were shallow half rounds, a shaped striping wheel would prob-

try to scratch or mar it!

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Louisville, Kentucky

ably do the job perfectly. Possibly some make of striping tool will take care of this job as it is.

Another suggestion is that you try a spray type of striper with adjustable side shields. These shields can be set to direct the spray material into the bottoms and onto the sides of the grooves while the handles are slowly rotated. Perhaps such an outfit could be adjusted to prevent any overspray.—C. M. BROWN.

Why Veneer Joints Raise Up

Referring to an article published some time ago under the above title, I have experienced similar trouble. At the time, I was finishing foreman for one of the largest manufacturers of phonographs and radios in the U. S. A. Our panels were all made in the same factory, which made it easier for us to find the trouble than where the panels are made in one place and used in another. I was accused of allowing water stain to remain too long on the surface before sponging off. Also, the rubbers were blamed for rubbing too close, allowing water and pumice to remain on too long before drying off. Also, someone suggested that we were using too much heat in our stain, filler and varnish kilns.

All of these were proven to be wrong, in this case, but each one seemed fairly reasonable to important men outside the finishing department. I knew there was something else causing the trouble, as we had had but a few pieces at odd times with raised

veneer joints, and the staining, kiln drying and rubbing were being as carefully watched as ever. So when it looked as though everyone was trying to place the blame on the finishing department, I started looking farther back to the veneer department. By having the cooperation of all concerned I found that the veneers were poorly glued ½-in. on each side of the joint due to applying too much pressure, thereby forcing the glue back from the thickest part, which is the edge covered by the paper tape.

Heavy pressure displaces the glue beneath the veneer almost the thickness of the tape. The tape will compress slightly itself, but not like soft glue. It is a good idea to check on the moisture content of core and cross banding, but if they were out of line the veneers would come loose at the edges even quicker than at the center joints, as the change in moisture content would be more rapid there than at the middle. These are what some veneer men call "starved joints."—OWEN R. MYERS.

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Cherry Cupboard

The question published in August INDUSTRIAL FINISHING on how to finish a cherry cupboard to make it look like an old piece, does not give much information. Is this cabinet made of new wood, or is it an old piece to be restored? Is it a single piece or one of several hundred for production?

The old cherry wood was an off-brown shade rather than red, and it had some streaks of light heartwood. In olden times many cabinetmakers used a combination of cherry and mahogany. For instance, a chest of drawers would have drawer fronts and a top made of striped or figured mahogany, while the remainder of the case was cherry. Likewise, some old tables were made with legs of cherry and tops of mahogany. Cherry takes a stain perfectly for matching with mahogany.

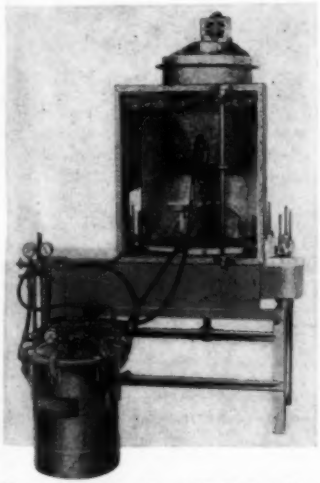
I have finished many old cherry pieces. Sometimes I stain the wood with a very thin or light coat of brown mahogany stain, after which I shellac the surface, rub it and then give it a glaze coat, blending it out well and rubbing the edges more than other places. I make this glaze with thin burnt umber and turpentine, and a small amount of oil and drier. The final finish can be whatever you wish. —J. K. COOPER.

Automatic Spray Machine

A new light duty, rotary, spray-finishing machine, with a production range of 400 to 3,000 articles per hour, has been announced by The DeVilbiss Co., Toledo, Ohio. The machine is designed to meet the need for fast, semi-automatic finishing equipment for articles and parts such as automobile horns, lipstick cases, radio bulbs, lamp shades, can lids, metal hardware, file handles, camera cases, paper cups, glassware, round metal ware, electrical parts, balls, footwear, speedometer cases, toys, etc.

Installation of proper workholders permits finishing of a variety of diffent parts on the same machine. Speed reduction unit is standard to permit variable speed operation, and, if desired, a cam may be provided so that every second spindle only is sprayed.

Length of spraying period per cam is adjustable to the point of maximum efficiency and economy. Automatic spray gun and air control valve control the operation rigidly to the proper adjustment.



The machine has a turntable that carries 15 rotating spindles to hold small parts.

A ¼-h.p. motor with synchronous speed of 1800-r.p.m. powers the unit. Turntable is 34¼-in. in diameter, and carries 15 spindles each of which rotates on ball bearings. All pulleys, belts, sprockets, etc., are fully guarded for operator's protection.

The new machine, known as Type YB-5103, is equipped with turntable, spindles, automatic spray gun and control valve, air transformer, material tank, exhaust fan, hose and hose connections. It is assembled at the plant and shipped direct.

New...

MATERIALS SUPPLIES EQUIPMENT

Chemically Treated Buffs

An interesting method of making buffs last longer and stand up better against abrasive wear is a chemical treatment perfected by the Hanson-Van Winkle-Munning Co., Matawan, N. J., manufacturers of electroplating equipment and supplies. These buffs are made of two types of square count cloth called Economy and Tractor. Buffing cloths, as they come from the loom, are passed through a chemical bath. The wear resistance developed by this chemical treatment is further increased by the carefully balanced construction of the buffing textile. Treated buffs absorb polishing composition better, giving improved cutting and coloring action on the product being buffed.

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The chemicals used for treating the buffs include a hygroscopic element whose purpose is to absorb moisture from the air, fixing it in the cloth and giving a conditioned sheeting at all times.

"Tops"—One-Coat Finish

A new finishing material named "Tops" is announced by V. J. Dolan & Co., 1830 N. Laramie Ave., Chicago, Ill. Among the features of this new material, according to the manufacturer, are the following:

1) Gives the equivalent of two coats of lacquer with a single application.

2) Air-dries like lacquer and does not require heating or baking, nor any special equipment.

3) Is tough as lacquer.

4) Flows out beautifully and rubs easily to a brilliant luster.

5) Is exceptionally resistant to alcohol and water.

6) Covers 30% to 50% greater area than ordinary lacquer.

Because of its unusual properties the manufacturer offers it with certain restrictions. Instead of sending out samples promiscuously, the Dolan Co. reserves the right of making shipments only to such firms as will permit a company representative to go in and demonstrate "Tops" in order that there may be no confusion due to its many new characteristics.

Quick-Bake Synthetic Enamel

A new line of "high speed" synthetic enamels, especialy suitable for use on metal products subjected to severe service, such as washing machines, refrigerators, kitchen cabinets, etc., has been developed by Maas & Waldstein Co., makers of industrial finishes, Newark, N. J.

These new enamels, known as "Codur" Enamels, cut down the time

needed for finishing and thus enable manufacturers to speed up production. They dry out of dust rapidly and bake in a few minutes to a fine finish that is exceedingly durable and resistant to marring, moisture, and the action of ordinary household chemicals. The baking schedule varies with the temperature, but at 325°F. 15 minutes is sufficient.

Codur enamels are furnished in all plain colors and also in colors with metallic lusters. They cover well in one spray coat, or can be used over a primer; are supplied in types suitable for use on all metals and many plastics, including Bakelite.

Non-Royalty Lacquers for Wood Finish

The Hilo Varnish Corp., 44 Stewart Ave., Brooklyn, N. Y., announces its latest development in wood finishing lacquers for wood furniture—a complete line of non-royalty lacquers comprising sanding sealer, gloss and flat lacquers. These lacquers are specially formulated to fit many of the standard finishing schedules now in use; for example one coat of sealer and two coats of gloss clear for a high gloss finish; or a coat of sealer and a coat of flat for a full flat finish.

Hammer-Effect Finish

A new marproof hammered-effect finish designed especially for use on rough or porous metals is announced by the Ault & Wiborg Corp., New York, N. Y. The new finish will cover defects in the metal, such as spot weld marks and file scratches, and while it has the effect of a rough finish, its surface is actually smooth.

Polymeroid is made with a Polymerin base, hence it retains the characteristics of heat resistance, durability, and adhesion which Polymerin provides. Like Polymerin, it may be baked on a short schedule.

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Silver Lacquers
Textile Lacquers
Maintenance Paints
Automotive Finishes
Machine Tool Finishes

The Emblem of Quality in Finishes

The above list is by no means complete, but we trust it will serve to give you an idea of the extent to which WALKER'S chemical staff has solved problems submitted to it.

H. V. WALKER CO.
ELIZABETH, NEW JERSEY

FINISHES
To Fit the Product

New England Warehouse
BROWN & DEAN CO., Providence, R. I.

The heat resistance of Polymeroid makes it well adapted for use on such products as boiler jackets, space heaters, water-heater cabinets, and all types of heating appliances. Polymeroid's toughness and resistance make this finish suitable for vending machines, office equipment, furniture, air-conditioning units, and other uses where durability is an important consideration.

Although two operations are involved in its application, Polymeroid is essentially a one-coat finish. The first coat is applied with a spray gun. While this is still wet, another coat, usually nothing but solvent, is sprayed on. This second coat causes the hammered appearance which gives the effect of a rough finish, thus hiding any metal defects that may be present. The uniformity of this hammered pattern can be closely controlled. Since the surface is actually smooth, although uneven in appearance, it will not attract dust as do some finishes used for similar applications. According to the manufacturer, Polymeroid has remarkable mileage. It is available in all colors, and it can be furnished with a high gloss.

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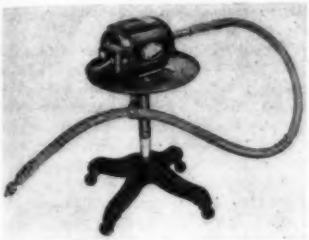
Finish Remover

"Strypeeze," a new semi-paste remover, just put on the market by The Savogran Co., India Wharf, Boston, Mass., has been produced especially for removing bakelite and synthetic resin types of finish as well as paint, varnish, enamel, shellac and lacquer. As soon as it is flowed on with a brush, a wax-free anti-evaporant film forms on the top, keeping the remover in place even on upright or overhead surfaces, driving the powerful solvents into the finish, and keeping the remover wet for hours. Because it stays wet longer and keeps working as long as it is wet, Strypeeze usually removes all coats to the bare wood, metal or plaster, with one application.

Strypeeze contains no benzol, no alkali, no caustic, no acid; is harmless to the surface stripped, hands and clothing. It is less inflammable than the usual remover, having a flash point of 108°F. The anti-evaporant used in Strypeeze instead of wax is so effective that only 7% is required (as against as much as 35% for wax) leaving 93% active paint-removing solvents. A gallon of Strypeeze strips approximately 200-sq. ft. of surface.

Small Flexible Shaft Polisher-Buffer

The Stow Junior, announced by Stow Mfg. Co., Binghamton, N. Y., is a portable, pedestal-type, motored flexible shaft that can be fitted with rotary wire brushes, sandpaper discs



Takes power from electric light socket.

or buffing and polishing wheels. It is a useful machine for cleaning and smoothing surfaces before finishing and for buffing and polishing surfaces after finishing coats have been applied.

The pedestal is adjustable in height and maintains a low center of gravity with consequent good balance, even in extended position. It carries a convenient tool tray. Motors of ¼, 1/3 or ½-hp. can be had, with two choices of speeds—1725 or 3450-r.p.m.

Wrinkle Finish for Flexible Materials

New Wrinkle, Inc., Dayton, Ohio, announces the development of wrinkle finishes for coating flexible materials such as fabrics, paper and leather. After the fabric or paper is coated or sprayed, it dries into a wrinkle finish of uniform texture—from small to coarse, depending upon the desires of the manufacturer—in much the same manner that it finishes metal products, but with a greater degree of flexibility. Once it is applied it will not chip or peel as the finish practically welds itself to its background.

The finish is not embossed onto the flexible materials. It is simply sprayed, knifed or rolled on. It dries into beautiful and attractive patterns in rich fast colors.

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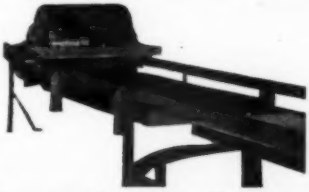

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Protect-O-Metal Compound

Protect-O-Metal Compound manufactured by G. W. Smith & Sons, 2016 E. 3rd St., Dayton, Ohio, prevents corrosion and the collection of scale and splatter on the surface surrounding a new weld. It eliminates 80% of weld cleaning time.

It is brushed on the surface to be welded. After welding, wipe the surface with a clean cloth and all splatter and surface oxides are removed. This compound forms an ideal priming coat for a paint finish, if desired. It prevents formation of rust on steel after welding and will not harm the surface of any metal. It does not produce carbon that might affect the weld or material being welded.

Used in connection with die casting, the compound is sprayed or brushed on a die to form a perfect heat-resistive coating, thereby preventing the molten metal from sticking to the solid metal and allowing perfect ejection of the castings.

The preservation qualities of this patented compound will multiply many times the ordinary life of a die. This thin lubricating film will not be burned off by the first shot of metal but will maintain its protective qualities for at least 25 shots. Due to the perfect ejection after each shot, more castings can be cast in one die.

This Spraying Unit for Hot Lacquer

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Both pressure and temperature are adjustable, giving a complete range from 5 to 40-lbs. pressure, and from 100° to 190° F. Temperature is maintained by an adjustable thermostat which can be set at the temperature wanted. It remains constant until a different temperature is required.

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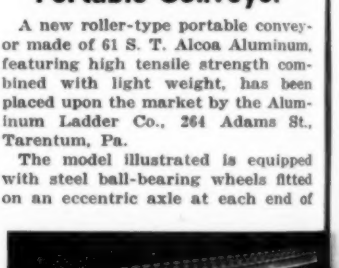
M. & E. MANUFACTURING CO.
720 S. Meridian Street, Indianapolis, Ind.

Portable Conveyor

A new roller-type portable conveyor made of 61 S. T. Alcoa Aluminum, featuring high tensile strength combined with light weight, has been placed upon the market by the Aluminum Ladder Co., 264 Adams St., Tarentum, Pa.

The model illustrated is equipped with steel ball-bearing wheels fitted on an eccentric axle at each end of the conveyor. When the wheels are in a "down" position, the conveyor is easily rolled from place to place; when they are lifted up, the conveyor rests firmly on the floor. Due to the light weight of aluminum, only one or two people are needed to change location of the conveyor.



Useful, light, portable, substantial.

The rugged construction and high tensile strength of this new conveyor enable it to support extremely heavy loads. It will not rust or deteriorate in any way, and therefore will with-

stand years of severe service. Ease of cleaning makes it ideal for use where liquids are liable to spill from open containers.

The new conveyor can be supplied with or without legs and with or without wheels on the legs. The model shown is 10-ft. long, 14-in. wide, and weighs only 60-lbs. The variouse types are available in varying widths, lengths and heights to suit different needs.

Finishing Furniture Along the Conveyor Line

(Continued from page 16)

floor. Some of the work performed at these booths includes the spraying of mirror backs, case backs, bed rails, shelves, etc.

To keep everything going with clock-like regularity and without slighting any work along the conveyor line, relief men are available to fill in wherever and whenever they are needed. One man attends to the preparation of finishing materials, the filling and cleaning of containers, and whatever else is needed to keep the finishing line in full operation continuously. On the whole this finishing department is operating with remarkable smoothness, precision and efficiency.

Report on Quick Paint Tests

An interesting story that gives a comparison of indoor and outdoor exposure tests on painted wood and metal panels is included in an illustrated bulletin published for free distribution by Atlas Electric Devices Co., 361 W. Superior St., Chicago, Ill. Pictures of the results are shown. The indoor tests were accelerated tests made in a standard weatherometer which is adjustable to duplicate alternate cycles of any type of outdoor exposure in a fraction of the time required for actual outdoor exposure tests. The bulletin consists of eight pages 8½x11-in.

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EDITORIAL

Conveyor System Offers Several Advantages

While inspecting and making notes on a number of conveyorized finishing departments in furniture factories recently, the Editor was impressed with what you might call the indirect or supplementary advantages of having the finishing room conveyorized. Even casual inspection reveals several of them. Perhaps most impressive of all is the fact that complete conveyorization compels management, foremen and workers to do what they should have been doing anyway.

In the first place a completely and properly timed finishing schedule must be worked out and maintained; and adequate time, space and facilities must be provided for it to work successfully.

One of the really important things that should always be done in any plant, but which often isn't done until conveyors are put in, is to provide for careful inspection of all furniture in the white before it goes onto the finishing conveyor line. At this point of inspection, one or more men may be needed to fix up every surface so that it is 100% smooth and sound before entering the finishing department. This takes cabinet repairing and sanding in the white out of the finishing department, and permits finishing operations to proceed without delay and according to a predetermined schedule.

The conveyor system compels the finishing foreman to plan ahead and have materials and supplies in readiness for whatever is due to enter the finishing department. Furniture traveling on a conveyor doesn't wait like furniture stacked on the floor. It keeps moving, therefore all operations in the finishing department must be kept active during working hours. Ovens and drying rooms must be kept in satisfactory working condition, with their measured temperature, humidity, air circulation and the proper entrance of fresh air.

With the finishing department conveyorized, the foreman is not bothered so much by workmen running to him for this and that. He has time to think and plan. The precision operation of a conveyorized finishing room encourages a desire for—in fact, it al-

most demands—cleanliness, good light and proper ventilation, which are acknowledged as highly desirable in every finishing department.

Conveyorization tends to make the finishing results and finishing costs strictly uniform. It practically eliminates repair finishing by removing the causes of damage to goods in process in the finishing department. Properly laid out and operated, it prevents those crowded conditions which prevail where furniture is going through on the floor.

Changing Finishes

* The principle of constantly seeking ways and means for increasing production schedules and reducing costs is admittedly a good one. Successful manufacturing today requires that this procedure be consistently applied. However, it is a beneficial procedure only so long as the limitations of the available materials and equipment are not exceeded. This is particularly true in the case of various finishing operations . . . . since not only sales but also the continuance of customer goodwill is so dependent on the appearance and durability of the finish.

Any proposed change in a proven finishing process, no matter how economical of time and money it may seem, should be weighed in the light of its effect on the quality of the finished product. Will there be any possibility of premature breakdown? Do the savings involved warrant the risk of poor eye appeal after a short period of service? These and similar questions must be conclusively answered before any action is taken.

The intended thought in these paragraphs is not that new finishes and finishing methods should be regarded with suspicion and disposed of without trial. Rather it is that caution should be the keynote in the acceptance of new developments. It is best that known materials and methods be continued until such time as the new idea has proven itself by laboratory tests and field trials. Speedy and inexpensive production is one thing, but sacrifice of quality is another!—W. G. S.

*Guest Editorial . . . . Many readers can write an excellent editorial — two or three paragraphs presenting a timely suggestion or valuable idea that will stimulate thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

The Tinkerer and His Homemade Makeshifts

You probably know the tinkerer type—the ingenious mechanic who is handy in patching up old machines and tools; the man who can take old junk and construct a makeshift device or piece of equipment. You admire his knack of doing these things—but look at him. Isn't he a poor man economically? He is seldom if ever what you would call a successful business man or professional man.

Some small manufacturing concerns are in the same class with the individual tinkerer. They are struggling along with various out-of-date, patched-up equipment and homemade makeshifts. Gentlemen, it isn't profitable. True, you can

build homemade spray booths, conveyors, racks, trucks, ovens, tumbling barrels, dipping tanks, filters, exhaust systems, and various other equipment used in the finishing room—and the first cost may be less, but you have cheated yourself nevertheless. In design, workmanship, performance, safety and durability your makeshifts are lacking in comparison to the professionally built equipment that your leading competitors are using. Makeshifts are a hazardous gamble that have no salvage value, whereas modern equipment represents an investment that will be profitable if properly managed; if improperly managed it still has a loan value and a resale value.

To Get Best Results From Equipment

All of the mechanical equipment now in service in production finishing rooms is of no value unless it is used—and it can be very troublesome and costly if it is not used properly. Investment in equipment is generally made with the idea of enabling a certain number of workmen to produce more and better work at a lower cost per unit. The equipment alone produces nothing. It merely aids workmen to produce something. It represents improved tools in the hands of workmen, or under the management of workmen, to multiply the profitable results of their time on the job. A certain number of workmen must be employed regardless of how elaborately mechanical and automatic the equipment may be.

A highly mechanized finishing department really places more responsibility upon the workmen and their foreman. As a result, a higher type of trustworthy, responsible, intelligent men need to be employed where expensive equipment is in service—and it is important that these men have complete information about the adjustment, operation and maintenance of this equipment. Among other things, this calls for close cooperation with the manufacturers of the equipment, as these concerns are eager to offer any suggestions, recommendations or service that will contribute toward making their equipment produce the most satisfactory results.

Many of these equipment manufacturers assist more or less in supplying material for published articles which give general information about the care and operation of certain types of tools and machines. However, detailed specific instructions must be conveyed usually by a letter or through the personal call of a trained representative. This point is emphasized by one concern in their letter accompanying an article that deals with the care and operation of spray equipment. They say:

"While not attempting to go into the fine details which might be discussed in the maintenance of spray equipment, yet we believe that the principal points of consideration have been covered. Specifically, of course, detailed instructions for each particular piece of equipment, as published by the manufacturer of that equipment, should be followed carefully in the operation, care and cleaning of every piece of spray painting equipment. Unquestionably, more spray finishing equipment failures are due to the improper care and maintenance of the equipment than to any other reason."

How to Treat the More Expert Finishers

The best finishers have more pride and are more sensitive than those of ordinary caliber, therefore they should be handled more tactfully by their employers. One of our readers, a man of extensive experience, offers the following timely remarks along this line:

"I have often heard employers discuss the abilities of various skilled workmen. You hear them say: 'It's a shame that a man of his ability has no ambition to assume greater responsibility'. Here's why. These skilled workmen have learned after years of experience that thinking aloud usually leads to trouble with jealous department heads.

"Out of 200 average finishers approximately ten skilled finishers will be found, and perhaps one all-round 'top-notcher'. A highly skilled workman is usually given all of the intricate and tedious operations which are not to be entrusted to a less skillful workman. It is this continual working under a strain that keeps him keyed up and high-strung. He becomes as temperamental as an actor or opera star. This temperament is offset, however, by his ability to turn out work of a quality and in a quantity that the average finisher could not hope to produce.

"The best way to get the most efficiency from these extra skilled workmen is to seek their council when changes of methods are to be made. Spare them all of the unnecessary red tape possible. Encourage them to use the suggestion box and when they submit an idea, act upon it as quickly as possible. If their ideas are acceptable, then compensate them justly. When their ideas are not practical, reject them with utmost tact. Show these men the respect that is due an expert, and they will go out of their way to please you. They will not only turn out a big day's work, but will be glad to think up and make sketches of worth while improvements in their leisure time. Progress will ensue.

"If a man of this type has the ability and desire to handle men and manage a department, give him a chance when and if the opportunity presents itself. Here is what happened in one place.

"A foremanship vacancy occurred in a finishing department. When it was suggested that a certain capable workman be chosen to fill the vacancy, the suggestion

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was quickly vetoed by the one in authority, with some such statement as this: 'There is no doubt he has the ability and personality for the position, but who would be left to do the work? We could hire 100 finishers and yet we might not find one of them who could take his place'.

"The usual procedure was followed. The position was filled by an average workman whose chief qualification was—excellent handwriting. The disappointed expert had been in the employ of the company for a number of years. He had seen numerous fellow workmen, less qualified than himself, promoted. This last disappointment was too much for him and he finally quit because he felt that keeping a man in prison because he is a model prisoner is unjust."

Letters from I. F. Readers

(Continued from page 9)

Hot Lacquer

We shall be obliged if you will kindly furnish us with the names, etc., of manufacturers of equipment for the application of high-temperature cellulose enamels. — G. Paint Products, Middlesex, England.

We would be pleased if you will oblige us with any information you may have available on hot spray painting. —T. R. Equipment Pty. Ltd., Australia.

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I have been receiving INDUSTRIAL FINISHING for only a few months, but have found it so helpful and so full of timely articles that I would not be without it. I read it from cover to cover, for I find valuable suggestions, even in finishes foreign to my own line.—S. T. S.

Luminous Paint

For the past few days I have been trying to locate some firm that manufactures a paint which is self luminous—so far without success. One firm advised me to write you. If you know of any firm manufacturing this paint I would greatly appreciate learning their address—F. J.

Silk Screen Equipment and Supplies

The Naz-Dar Co., 4022 N. Rockwell St., Chicago, Ill., has issued bulletins listing and describing its complete line of everything needed for making, using and maintaining silk screen stencils for all kinds of utility and decorative stenciling on an economical production basis.

Lawrence-McFadden Co. Moves Branch to Milwaukee

The Lawrence-McFadden Co. (wood finishing products) Philadelphia, Pa., announces that, effective July 1, its former Chicago warehouse facilities have been moved to Milwaukee, Wis., at 2429 N. 50th St. The company will serve the mid-western territory from this address.

Spray Training School

The DeVilbiss Co., Toledo, O., announces the schedule of their training school for the last three months of 1939.

This school is open to industrial painters, master painters, automobile refinishers and all others interested in learning the technique of spray-painting and the use and care of spray-painting equipment.

The training period lasts for one week. Classes will start on Sept. 11, Oct. 9, and Nov. 6.

Special rates in Toledo hotels and boarding houses near the plant have

been secured by the company for men attending the school.

These classes have been well attended in the past because of the facilities for study, otherwise unobtainable, offered by The DeVilbiss Laboratories.

It is advisable to enroll in the school as far in advance as possible, since the size of the classes must be limited and since there will be no training periods other than those announced.

Al. Miesem Promoted to V. P. by Roxalin Flexible Lacquer Co.

Appointment of Albert Miesem, director of sales, as vice president in charge of sales was announced Sept. 1, by the Board of Directors of the Roxalin Flexible Lacquer Co., Elizabeth, N. J. In making the announcement, the Board of Directors stated the appointment was made "in recognition of Mr. Miesem's outstanding services to the company."

New Process Copper Powder

The Edward C. Ballou Co., 6 Varick St., New York, N. Y., announces a New Process Copper Powder which, when used in connection with high-bake synthetic vehicles, will produce a very close imitation of a real copper-plated finish. It is said to be far superior to the ordinary copper bronze powders, both in covering qualities and brilliancy. A sample will be forwarded on request, with suggestions as to proper vehicles to be used.

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Have had seventeen successful years handling lacquer and varnish salesmen for national organizations. Have a thorough technical knowledge of industrial finishes and their application, and a good following among volume accounts. Address IF-763, care Industrial Finishing.

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